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ABSTRACT

Statistics regarding Australians participating in apprenticeships and traineeships in the electrical and electronics trades in 1995-1999 were reviewed to provide an indication of where skill shortages may be occurring or will likely occur in relation to the following occupations: electrical engineering associate professional; electronics engineering technician; electrical and electronics tradespersons; and electrical and telecommunications trades assistants. The review focused on the following items: commencements, number in training, and completions; age; Australian Qualifications Framework level; geographic region by state/territory; school attendance status; other training; and enrollment figures versus projected employment trends. The following were among the main findings: (1) for all selected electrical and electronics trades together but excluding electrical and telecommunications trades assistants, commencements and numbers in training grew but completions declined from 1995 to 1998; (2) of the specific occupations reviewed within the four occupational categories, two (electronics and office equipment tradespersons and electrical distribution tradespersons) declined; (3) in 1995-1998, electrical and electronics trade

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commencements increased in every state and territory except Tasmania; and (4) the communications tradespersons occupation category had the highest forecast average annual growth rate (5.4%) and has also experienced one of the greatest growth rates (44.7%) for apprentices and trainees from 1995 to 1998. (Contains 12 tables.) (MN)

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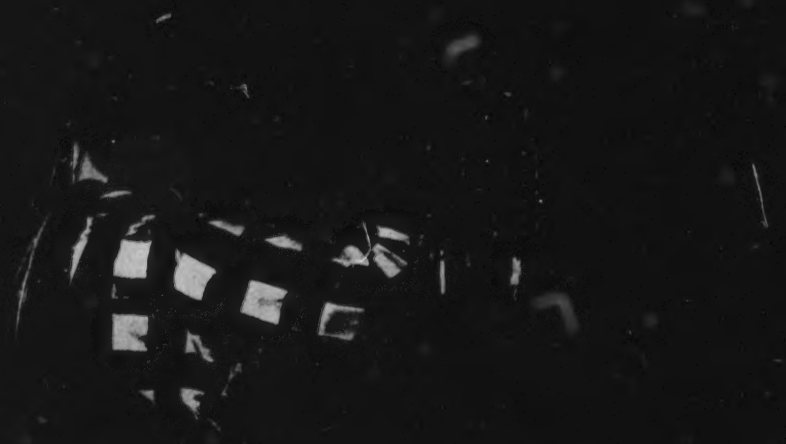
Australian apprentice and trainee statistics



Electrical and electronics trades

1995 – 1999

ED 450 267

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AUSTRALIAN
APPRENTICE
& TRAINEE
STATISTICS

Electrical and Electronics Trades 1995 to 1999

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1 Introduction

The purpose of this report is to provide information on trends over the years 1995 to 1998 in the realm of contracts of training in vocational education and training in the electrical and electronics trade occupations in Australia. Initial raw figures are also provided for 1999. This information will be used to provide an indication of where skill shortages may be occurring or likely to occur in relation to specific electrical or electronics trade occupations.

The main electrical and electronics trade occupations for which apprentice and trainee data are considered in this report are:

- Electrical engineering associate professionals (ASCO code 3123)
- Electronics engineering technicians (3124-13)
- Electrical and electronics tradespersons (43)
- Electrical and telecommunications trades assistants (9918).

More detailed, sub-category investigation of apprentice and trainee numbers is provided for some of these occupation areas.

Comparisons of apprentice and trainee numbers are also made with projections of employment growth in the electrical and electronics trade occupations.

Provision of this information will help to identify skill shortages for, or within, particular electrical and electronics trade occupations or whether current shortages in electrical and electronics trade occupations are likely to be overcome in the short-term.

Factors including widespread technological changes, the requirement of trade industries for more highly skilled and productive apprentices, increased competition in world trade and the need to improve the transition from school to work have had a major impact on the employment-based training system in Australia.

The government has reformed the apprenticeship and trainee system by making it more flexible and responsive to employer needs and ensuring that quality training is provided. The new training arrangements covering apprenticeships and traineeships are collectively known as New Apprenticeships which the government began introducing from 1 January 1998.

This report focuses on providing more detailed information on such factors as trends in numbers in training, commencements and completions, in relation specifically to electrical and electronics trade occupation contracts of training (that is, predominately apprenticeships) by each of the electrical and electronics trade occupation areas. This information is provided in the context of relevant economic and labour market information.

The employment forecast information utilised in this report is based on the data provided by Chris Murphy and Justin Douglas of Econtech in their report commissioned by the NCVER entitled *The Outlook for Jobs*.

Contract of training data considerations

The contract of training figures for 1995 through 1998 in this report have been derived from apprentice and trainee information available in the NCVER's December 1999 Contracts of Training collection. It should be noted that the figures may change slightly in subsequent collections owing to the processing of late returns. It also follows that any growth rates presented may also change in the future.

The contract of training figures for 1999 in this report are estimated figures calculated by the NCVER based on the latest data available (preliminary reported data for December quarter 1999) at the time of this report. These estimates are used to take into account data reporting lags that occur resulting in all 1999 activity not yet being reported to or known by the NCVER. The figures for 1999 used in this report may therefore differ from those published at a later date and should be used with caution.

Figures in this report have been rounded to the nearest 100, whereas growth rates have been based on unrounded figures.

Owing to missing historic information for one jurisdiction, 1995 and 1996 completions data has been derived from the December 1998 Apprentice and Trainee data.

2 Commencements, number in training and completions, 1995 to 1999

This section focuses on trends in commencements, number in training and completions from 1995 to 1999.

For commencements (table 1):

- For all the selected electrical and electronics trades together but excluding electrical and telecommunications trades assistants, commencements grew from 5,160 in 1995 to 5,690 in 1998. Based on preliminary 1999 data, commencements have continued to grow, to about 6,110 in 1999.
- The annual growth rate for commencements over the period 1995 to 1998 was 3.3%, with stronger growth of 7.1% from 1997 to 1998.
- Growth in commencements varied across the selected 4-digit level occupations over the period 1995 to 1998. The biggest growth occurred for communications tradespersons while electrical distribution tradespersons and electronics and office equipment tradespersons declined.
- Commencements for electrical and telecommunications trades assistants grew very strongly, from 80 in 1995 to 580 in 1998.

For the number in training (table 2):

- For all the selected electrical and electronics trades together but excluding electrical and telecommunications trades assistants, the number in training grew from 15,460 in 1995 to 17,160 in 1998. Based on preliminary 1999 data, indications are that the number in training has continued to grow, to around 17,890 in 1999.
- The annual growth rate for the number in training over the period 1995 to 1998 was 3.6%, the growth rate for 1997 to 1998 being slightly lower at 3.4%.
- The number in training grew for all selected 4-digit level occupations over the period 1995 to 1998 except electrical distribution tradespersons and electronics and office equipment tradespersons.
- The number in training for electrical and telecommunications trades assistants grew very strongly, from 80 in 1995 to 530 in 1998.

For completions[1](table 3):

- For all the selected electrical and electronics trades together but excluding electrical and telecommunications trades assistants, completions declined from 3,660 in 1995 to 3,530 in 1998. Based on preliminary 1999 data, indications are that completions have grown to 3,610 in 1999.
- The annual growth rate for completions over the period 1995 to 1998 was –1.2%, the growth rate for 1997 to 1998 is slightly less at –1.1%.
- Growth for completions varied across the selected 4-digit level occupations over the period 1995 to 1998. The biggest growth occurred for electronics instrument tradespersons while several occupations including electricians declined.
- Completions for electrical and telecommunications trades assistants grew very strongly, from 10 in 1995 to 210 in 1998.

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[1] It should be noted that completions data should be treated with caution due to the possibility of under-reporting.

Table 1: Electrical and electronics trades commencements, 1995 to 1999

		Number					Annual growth rate* 1995-1998	Annual growth rate* 1995 - 1997	Growth rate 1997 - 1998 (%)
		1995	1996	1997	1998	*1999 (p)*			
3123	Electrical engineering associate professionals	10	(a)	30	30	*50*	31.0	65.8	-18.2
3124-13	Electronics Engineering Technician	(a)	(a)	0	0	*0*	-100.0	-100.0	-
4311	Electricians	3450	3160	3370	3630	*4070*	1.7	-1.2	7.8
4312	Refrigeration & airconditioning mechanics	500	450	560	610	*640*	6.3	5.6	7.8
4313	Electrical distribution tradespersons	140	110	110	110	*100*	-7.3	-10.4	-0.9
4314	Electronics instrument tradespersons	70	60	60	120	*130*	17.4	-10.1	100.0
4315	Electronics & office equipment tradesperson	280	240	150	140	*140*	-21.8	-26.4	-11.7
4316	Communications tradespersons	50	90	130	160	*300*	48.0	61.0	25.2
Other 43	Electrical & electronics tradespersons not known at 4-digit level	650	1070	900	900	*690*	11.8	17.6	0.9
Sub total		**5160**	**5170**	**5310**	**5690**	***6110***	**3.3**	**1.5**	**7.1**
9918	Electrical & telecommunications trades assistants	80	330	410	580	*720*	91.4	123.9	39.9

* Annual rates of growth are compound growth rates
(a) Represents figures between 1 and 9 inclusive
(p) Initial raw figures only, subject to future updating

Table 2: Electrical and electronics trades number in-training, 31 December 1995 to 1999

		Number					Annual growth rate* 1995-1998	Annual growth rate* 1995 - 1997	Growth rate 1997 - 1998 (%)
		1995	1996	1997	1998	*1999 (p)*			
3123	Electrical engineering associate professionals	20	20	40	60	*100*	40.7	38.3	45.5
3124-13	Electronics Engineering Technician	(a)	(a)	(a)	(a)	*0*	0.0	0.0	0.0
4311	Electricians	10880	11020	11040	11160	*11620*	0.9	0.7	1.1
4312	Refrigeration & airconditioning mechanics	1390	1470	1580	1710	*1780*	7.3	6.7	8.5
4313	Electrical distribution tradespersons	560	510	440	400	*340*	-10.5	-10.8	-9.7
4314	Electronics instrument tradespersons	170	230	250	290	*320*	18.2	19.7	15.3
4315	Electronics & office equipment tradesperson	950	790	620	430	*320*	-23.3	-19.7	-30.1
4316	Communications tradespersons	100	160	250	310	*440*	44.7	55.0	26.1
Other 43	Electrical & electronics tradespersons not known at 4-digit level	1380	1980	2390	2800	*2960*	26.6	31.4	17.4
Sub total		**15460**	**16180**	**16600**	**17160**	***17890***	**3.6**	**3.6**	**3.4**
9918	Electrical & telecommunications trades assistants	80	290	350	530	*580*	91.9	116.0	51.4

* Annual rates of growth are compound growth rates
(a) Represents figures between 1 and 9 inclusive
(p) Initial raw figures only, subject to future updating
Source: NCVER unpublished apprentice and trainee data

Table 3: Electrical and electronics trade completions 1995 to 1999

		Number					Annual growth rate* 1995-1998	Annual growth rate* 1995 - 1997	Growth rate 1997 - 1998 (%)
		1995	1996	1997	1998	*1999 (p)*			
3123	Electrical engineering associate professionals	(a)	(a)	(a)	(a)	*10*	-7.2	9.5	-33.3
3124-13	Electronics Engineering Technician	0	0	0	0	*0*	-	-	-
4311	Electricians	2690	2330	2550	2530	*2380*	-1.9	-2.5	-0.7
4312	Refrigeration & airconditioning mechanics	250	260	320	290	*370*	4.4	12.7	-10.3
4313	Electrical distribution tradespersons	170	150	140	120	*110*	-10.8	-7.9	-16.4
4314	Electronics instrument tradespersons	40	30	40	80	*90*	21.3	1.2	74.4
4315	Electronics & office equipment tradesperson	320	240	210	190	*150*	-15.0	-17.9	-8.9
4316	Communications tradespersons	20	20	20	30	*90*	12.8	-6.7	65.0
Other 43	Electrical & electronics tradespersons not known at 4-digit level	170	230	270	280	*430*	19.2	28.1	3.3
Sub total		**3660**	**3270**	**3570**	**3530**	***3610***	**-1.2**	**-1.2**	**-1.1**
9918	Electrical & telecommunications trades assistants	10	50	220	210	*320*	152.8	311.4	-4.5

* Annual rates of growth are compound growth rates
(a) Represents figures between 1 and 9 inclusive
(p) Initial raw figures only, subject to future updating
Source: NCVER unpublished apprentice and trainee data

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Trends in specific occupations, 1995 to 1998

This sections comments on trends specifically in relation to the 4-digit occupations under review.

The occupations which showed strong growth over the period 1995 to 1998 were:

- Electrical and telecommunications trades assistants,
- Communications tradespersons,
- Electronics instrument tradespersons, and
- Refrigeration and airconditioning mechanics.

Two occupations showed strong declines over the period 1995 to 1998:

- Electronics and office equipment tradespersons, and
- Electrical distribution tradespersons.

Electricians is the major 4-digit occupational category for the selected electrical and electronics trades. Numbers of apprentices and trainees in this occupation have grown in terms of numbers, but not to the same extent in terms of percentages as some of the other occupational groups. It is also worth noting the growth in apprentices and trainee commencements in this occupation over the period 1995 to 1998 is less than the forecast growth in employment.

3 Age

This section focuses on trends in commencements and numbers in training from 1995 to 1998 by age.

For commencements (table 4):

- For all the selected electrical and electronics trades together but excluding electrical and telecommunications trades assistants, commencements grew for each of the age cohorts; 15 to 19, 20 to 24, and 25 or more years; over the period 1995 to 1998.

- Annual growth rates were higher for older age cohorts with the 20 to 24 and 25 or more years age cohorts having rates of growth of 4.5% and 8.8% respectively over the period 1995 to 1998. The growth rate for 15 to 19 years olds was lower at 2.1%.

- In terms of rates of growth, several 4-digit occupations experienced their strongest growth in the 25 or more year old age group, with generally less growth in the 20 to 24 year old age group, and even less again with respect to the 15 to 19 year old age group.

- The electrical distribution and electronics and office equipment tradespersons occupations both experienced a decline in the number of 15 to 19 year old commencements over the period 1995 to 1998.

For the number in training (table 5):

- For all the selected electrical and electronics trades together but excluding electrical and telecommunications trades assistants, the number in training grew for each age cohort; 15 to 19, 20 to 24, and 25 or more years; over the period 1995 to 1998.

- The 25 or more years age cohort had the highest annual growth rate over the period 1995 to 1998 (7.8%) while growth rates for the 15 to 19 and 20 to 24 year old cohorts were 5.0% and 2.9% respectively.

- Most 4-digit occupation groups experienced a rise in the number of 15 to 19 year olds in training. Exceptions were the electrical distribution and electronics and office equipment tradespersons occupations which experienced a decline in the number of 15 to 19 year olds in training over the period 1995 to 1998.

Table 4: Electrical and electronics trade commencements by age, 1995 to 1998

	Number				Annual growth rate*	Annual growth rate*	Growth rate
	1995	1996	1997	1998	1995 – 1998 (%)	1995 – 1997 (%)	1997 - 1998 (%)
3123 Electrical engineering associate professionals							
15 to 19 years	(a)	(a)	20	10	30.1	73.2	-26.7
20 to 24 years	(a)	(a)	10	10	48.1	73.2	8.3
25 years and over	(a)	0	(a)	(a)	0.0	41.4	-50.0
Sub total[1]	**10**	**(a)**	**30**	**30**	**31.0**	**65.8**	**-18.2**
3124-13 Electronics engineering technician							
15 to 19 years	(a)	0	0	0	-100.0	-100.0	-
20 to 24 years	(a)	(a)	0	0	-100.0	-100.0	-
25 years and over	0	0	0	0	-	-	-
Sub total[1]	**(a)**	**(a)**	**0**	**0**	**-100.0**	**-100.0**	**-**
4311 Electricians							
15 to 19 years	2350	2200	2260	2450	1.4	-2.0	8.6
20 to 24 years	760	660	760	810	1.9	-0.1	6.1
25 years and over	340	300	350	370	3.3	1.9	6.3
Sub total[1]	**3450**	**3160**	**3370**	**3630**	**1.7**	**-1.2**	**7.8**
4312 Refrigeration and airconditioning mechanics							
15 to 19 years	360	320	380	410	4.7	2.7	8.7
20 to 24 years	100	100	110	130	8.2	2.0	21.9
25 years and over	40	30	80	60	15.1	34.5	-15.8
Sub total[1]	**500**	**450**	**560**	**610**	**6.3**	**5.6**	**7.8**
4313 Electrical distribution tradespersons							
15 to 19 years	90	70	50	50	-19.8	-24.4	-9.6
20 to 24 years	30	30	40	40	17.0	24.9	2.6
25 years and over	30	20	20	30	0.0	-5.9	13.0
Sub total[1]	**140**	**110**	**110**	**110**	**-7.3**	**-10.4**	**-0.9**
4314 Electronics instrument tradespersons							
15 to 19 years	40	30	40	60	16.2	2.7	48.7
20 to 24 years	30	20	10	30	5.6	-34.5	175.0
25 years and over	(a)	(a)	(a)	30	50.0	0.0	237.5
Sub total[1]	**70**	**60**	**60**	**120**	**17.4**	**-10.1**	**100.0**
4315 Electronics and office equipment tradesperson							
15 to 19 years	200	130	60	60	-35.1	-45.4	-8.3
20 to 24 years	70	80	50	60	-3.7	-8.9	7.4
25 years and over	20	30	40	20	8.5	49.1	-42.5
Sub total[1]	**280**	**240**	**150**	**140**	**-21.8**	**-26.4**	**-11.7**
4316 Communications tradespersons							
15 to 19 years	30	60	70	70	33.0	54.5	-1.4
20 to 24 years	20	30	40	50	40.6	49.1	25.0
25 years and over	0	(a)	10	40	-	-	176.9
Sub total[1]	**50**	**90**	**130**	**160**	**48.0**	**61.0**	**25.2**
Other 43 Electrical & electronics tradespersons not known at 4-digit level							
15 to 19 years	450	780	660	650	12.6	20.8	-2.0
20 to 24 years	130	180	150	170	8.2	5.9	12.8
25 years and over	60	100	90	90	12.1	18.0	1.2
Sub total[1]	**650**	**1070**	**900**	**900**	**11.8**	**17.6**	**0.9**
ALL ABOVE ELECTRICAL AND ELECTRONICS TRADESPERSONS							
15 to 19 years	3530	3590	3540	3760	2.1	0.1	6.2
20 to 24 years	1140	1080	1170	1290	4.5	1.5	10.7
25 years and over	500	490	600	640	8.8	10.2	6.0
TOTAL[1]	**5160**	**5170**	**5310**	**5690**	**3.3**	**1.5**	**7.1**
9918 Electrical and telecommunications trades assistants							
15 to 19 years	40	190	220	240	83.8	136.4	11.0
20 to 24 years	30	70	110	150	74.6	100.9	31.9
25 years and over	20	60	80	180	130.6	130.9	130.0
Sub total[1]	**80**	**330**	**410**	**580**	**91.4**	**123.9**	**39.9**

* Annual rates of growth are compound growth rates

[1] Totals may include ages other than those in the range 15 to 64

(a) Represents figures between 1 and 9 inclusive

Source: NCVER unpublished apprentice and trainee data

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Table 5: Electrical and electronics trade number in training by age, 31 December 1995 to 1998

	Number				Annual growth rate*	Annual growth rate*	Growth rate
	1995	1996	1997	1998	1995 – 1998 (%)	1995 – 1997 (%)	1997 - 1998 (%)
3123 Electrical engineering associate professionals							
15 to 19 years	(a)	(a)	10	10	81.7	134.5	9.1
20 to 24 years	10	(a)	20	40	56.0	54.9	58.3
25 years and over	10	(a)	(a)	10	8.4	-9.5	55.6
Sub total[1]	**20**	**20**	**40**	**60**	**40.7**	**38.3**	**45.5**
3124-13 Electronics engineering technician							
15 to 19 years	0	0	0	0	-	-	-
20 to 24 years	(a)	(a)	(a)	(a)	-20.6	-29.3	0.0
25 years and over	0	0	(a)	(a)	-	-	0.0
Sub total[1]	**(a)**	**(a)**	**(a)**	**(a)**	**0.0**	**0.0**	**0.0**
4311 Electricians							
15 to 19 years	3120	2950	2980	3140	0.1	-2.4	5.4
20 to 24 years	6570	6740	6630	6560	-0.1	0.4	-1.1
25 years and over	1190	1330	1440	1470	7.3	10.0	2.2
Sub total[1]	**10880**	**11020**	**11040**	**11160**	**0.9**	**0.7**	**1.1**
4312 Refrigeration and airconditioning mechanics							
15 to 19 years	460	470	500	550	6.0	4.3	9.5
20 to 24 years	780	830	860	930	6.1	5.1	8.0
25 years and over	140	170	210	230	17.2	21.9	8.4
Sub total[1]	**1390**	**1470**	**1580**	**1710**	**7.3**	**6.7**	**8.5**
4313 Electrical distribution tradespersons							
15 to 19 years	90	80	60	40	-25.9	-17.5	-40.3
20 to 24 years	310	310	280	270	-4.9	-5.8	-3.2
25 years and over	150	120	100	90	-15.1	-18.1	-8.8
Sub total[1]	**560**	**510**	**440**	**400**	**-10.5**	**-10.8**	**-9.7**
4314 Electronics instrument tradespersons							
15 to 19 years	40	50	50	70	15.7	5.8	38.3
20 to 24 years	90	120	140	150	18.5	21.6	12.5
25 years and over	40	60	70	70	20.4	29.1	4.6
Sub total[1]	**170**	**230**	**250**	**290**	**18.2**	**19.7**	**15.3**
4315 Electronics and office equipment tradesperson							
15 to 19 years	210	180	100	70	-31.7	-29.1	-36.5
20 to 24 years	630	530	420	300	-21.9	-18.8	-27.7
25 years and over	120	80	100	60	-18.2	-9.4	-33.3
Sub total[1]	**950**	**790**	**620**	**430**	**-23.3**	**-19.7**	**-30.1**
4316 Communications tradespersons							
15 to 19 years	30	60	70	80	47.8	62.9	21.7
20 to 24 years	70	100	140	170	35.9	44.5	20.1
25 years and over	10	10	30	50	95.1	113.8	62.5
Sub total[1]	**100**	**160**	**250**	**310**	**44.7**	**55.0**	**26.1**
Other 43 Electrical & electronics tradespersons not known at 4-digit level							
15 to 19 years	500	850	980	1020	26.4	39.5	3.9
20 to 24 years	700	910	1130	1470	28.2	27.2	30.1
25 years and over	180	220	280	310	20.3	23.8	13.4
Sub total[1]	**1380**	**1980**	**2390**	**2800**	**26.6**	**31.4**	**17.4**
ALL ABOVE ELECTRICAL AND ELECTRONICS TRADESPERSONS							
15 to 19 years	4590	4820	5040	5320	5.0	4.8	5.5
20 to 24 years	9180	9570	9680	9990	2.9	2.7	3.2
25 years and over	1840	2000	2230	2300	7.8	10.2	3.3
TOTAL[1]	**15460**	**16180**	**16600**	**17160**	**3.6**	**3.6**	**3.4**
9918 Electrical and telecommunications trades assistants							
15 to 19 years	30	140	150	180	84.5	124.4	24.7
20 to 24 years	30	90	140	170	76.5	112.1	22.2
25 years and over	20	60	70	180	125.3	107.7	165.2
Sub total[1]	**80**	**290**	**350**	**530**	**91.9**	**116.0**	**51.4**

* Annual rates of growth are compound growth rates

1 Totals may include ages other than those in the range 15 to 64

(a) Represents figures between 1 and 9 inclusive

Source: NCVER unpublished apprentice and trainee data

4 AQF level

This section focuses on trends in commencements and numbers in training from 1995 to 1998 by Australian Qualification Framework (AQF) level.

For commencements (table 6):

- For all the selected electrical and electronics trades together but excluding electrical and telecommunications trades assistants, AQF Certificate III and higher level commencements rose from 4,790 in 1995 to 5,540 in 1998, with all of this growth occurring from 1997 to 1998.

- For all the selected electrical and electronics trades together but excluding electrical and telecommunications trades assistants, AQF Certificate II and lower level commencements grew strongly in terms of growth rate but comprised an immaterial number of commencements (less than 10 in 1995 rising to 140 in 1998).

- The number of commencements at AQF Certificate level I and II were insignificant for all 4-digit occupations except communications tradespersons (where they have grown from naught to 90 over the period 1995 to 1998 and electronics and office equipment tradespersons (where they grew from naught to 50 over the period 1995 to 1998.

- The electrical and telecommunications trades assistants occupation experienced strong growth in the number of AQF Certificate I and II level commencements, from 70 in 1995 to 560 in 1998. AQF Certificate III and higher level commencements comprised an insignificant number of commencements in this occupation.

For the number in training (table 7):

- For all the selected electrical and electronics trades together but excluding electrical and telecommunications trades assistants, AQF Certificate III and higher level numbers in training rose from 13,990 in 1995 to 16,150 in 1998 with an annual growth rate of 4.9%.

- For all the selected electrical and electronics trades together but excluding electrical and telecommunications trades assistants, AQF Certificate II and lower level numbers in training grew strongly in terms of growth rate but comprised an immaterial number in training (less than 10 in 1995 rising to 130 in 1998).

- The number in training at AQF Certificate level I and II was insignificant for all 4-digit occupations except for electronics and office equipment tradespersons (where they grew from naught to 40 over the period 1995 to 1998 and communications tradespersons (where they grew from naught to 80 over the period 1995 to 1998.

- The electrical and telecommunications trades assistants occupation experienced strong growth in the number in training at AQF Certificate I and II levels, from 70 in 1995 to 510 in 1998. The number in training at AQF Certificate III and higher levels comprised an insignificant number in training in this occupation.

Table 6: Electrical and electronics trade commencements by AQF, 1995 to 1998

	Number				Annual growth rate*	Annual growth rate*	Growth rate
	1995	1996	1997	1998	1995 – 1998 (%)	1995 – 1997 (%)	1997 - 1998 (%)
3123 Electrical engineering associate professionals							
Certificate I & II	0	0	0	0	-	-	-
Cert. III & higher	(a)	(a)	30	30	44.2	88.6	-15.6
Not known	(a)	(a)	(a)	0	-100.0	-42.3	-100.0
Sub total	**10**	**(a)**	**30**	**30**	**31.0**	**65.8**	**-18.2**
3124-13 Electronics engineering technician							
Certificate I & II	0	0	0	0	-	-	-
Cert. III & higher	(a)	(a)	0	0	-100.0	-100.0	-
Not known	0	0	0	0	-	-	-
Sub total	**(a)**	**(a)**	**0**	**0**	**-100.0**	**-100.0**	**-**
4311 Electricians							
Certificate I & II	(a)	(a)	(a)	(a)	0.0	0.0	0.0
Cert. III & higher	3280	2830	3090	3630	3.4	-2.8	17.2
Not known	170	330	270	0	-100.0	27.4	-100.0
Sub total	**3450**	**3160**	**3370**	**3630**	**1.7**	**-1.2**	**7.8**
4312 Refrigeration and airconditioning mechanics							
Certificate I & II	0	0	0	(a)	-	-	-
Cert. III & higher	490	440	540	600	6.9	4.7	11.5
Not known	10	(a)	20	0	-100.0	41.4	-100.0
Sub total	**500**	**450**	**560**	**610**	**6.3**	**5.6**	**7.8**
4313 Electrical distribution tradespersons							
Certificate I & II	0	0	0	(a)	-	-	-
Cert. III & higher	140	110	110	110	-7.9	-10.8	-1.8
Not known	0	(a)	(a)	0	-	-	-100.0
Sub total	**140**	**110**	**110**	**110**	**-7.3**	**-10.4**	**-0.9**
4314 Electronics instrument tradespersons							
Certificate I & II	0	0	0	0	-	-	-
Cert. III & higher	70	60	60	120	17.4	-12.4	110.7
Not known	0	0	(a)	0	-	-	-100.0
Sub total	**70**	**60**	**60**	**120**	**17.4**	**-10.1**	**100.0**
4315 Electronics and office equipment tradesperson							
Certificate I & II	0	40	70	50	-	-	-33.8
Cert. III & higher	250	160	60	90	-29.2	-51.9	53.4
Not known	30	50	30	0	-100.0	-13.0	-100.0
Sub total	**280**	**240**	**150**	**140**	**-21.8**	**-26.4**	**-11.7**
4316 Communications tradespersons							
Certificate I & II	0	(a)	30	90	-	-	200.0
Cert. III & higher	40	60	70	70	19.2	35.9	-8.3
Not known	10	20	30	(a)	-15.7	61.2	-76.9
Sub total	**50**	**90**	**130**	**160**	**48.0**	**61.0**	**25.2**
Other 43 Electrical & electronics tradespersons not known at 4-digit level							
Certificate I & II	(a)	(a)	0	(a)	-20.6	-100.0	-
Cert. III & higher	510	960	820	900	21.1	26.8	10.4
Not known	140	100	80	(a)	-80.6	-23.3	-98.8
Sub total	**650**	**1070**	**900**	**900**	**11.8**	**17.6**	**0.9**
ALL ABOVE ELECTRICAL AND ELECTRONICS TRADESPERSONS							
Certificate I & II	(a)	40	100	140	205.8	349.4	41.6
Cert. III & higher	4790	4620	4780	5540	4.9	-0.1	15.9
Not known	360	510	430	(a)	-73.1	9.2	-98.4
TOTAL	**5160**	**5170**	**5310**	**5690**	**3.3**	**1.5**	**7.1**
9918 Electrical and telecommunications trades assistants							
Certificate I & II	70	300	370	560	96.0	124.8	48.9
Cert. III & higher	0	(a)	(a)	20	-	-	88.9
Not known	(a)	20	30	(a)	-50.0	87.1	-96.4
Sub total	**80**	**330**	**410**	**580**	**91.4**	**123.9**	**39.9**

* Annual rates of growth are compound growth rates

(a) Represents figures between 1 and 9 inclusive

Source: NCVER unpublished apprentice and trainee data

Table 7: Electrical and electronics trade number in training by AQF, 31 December 1995 to 1998

	Number				Annual growth rate*	Annual growth rate*	Growth rate
	1995	1996	1997	1998	1995 – 1998 (%)	1995 – 1997 (%)	1997 - 1998 (%)
3123 Electrical engineering associate professionals							
Certificate I & II	0	0	0	0	-	-	-
Cert. III & higher	20	10	40	60	51.0	52.8	47.6
Not known	(a)	(a)	(a)	(a)	-26.3	-36.8	0.0
Sub total	**20**	**20**	**40**	**60**	**40.7**	**38.3**	**45.5**
3124-13 Electronics engineering technician							
Certificate I & II	0	0	0	0	-	-	-
Cert. III & higher	(a)	(a)	(a)	(a)	0.0	0.0	0.0
Not known	0	0	0	0	-	-	-
Sub total	**(a)**	**(a)**	**(a)**	**(a)**	**0.0**	**0.0**	**0.0**
4311 Electricians							
Certificate I & II	(a)	(a)	(a)	0	-100.0	41.4	-100.0
Cert. III & higher	10190	10270	10350	10630	1.4	0.8	2.7
Not known	690	750	690	530	-8.2	-0.1	-22.5
Sub total	**10880**	**11020**	**11040**	**11160**	**0.9**	**0.7**	**1.1**
4312 Refrigeration and airconditioning mechanics							
Certificate I & II	(a)	0	0	(a)	44.2	-100.0	-
Cert. III & higher	1350	1440	1540	1680	7.5	6.8	9.0
Not known	40	30	40	30	-1.9	6.7	-17.1
Sub total	**1390**	**1470**	**1580**	**1710**	**7.3**	**6.7**	**8.5**
4313 Electrical distribution tradespersons							
Certificate I & II	0	0	0	(a)	-	-	-
Cert. III & higher	540	500	440	400	-9.9	-9.9	-9.8
Not known	20	10	(a)	(a)	-59.5	-55.3	-66.7
Sub total	**560**	**510**	**440**	**400**	**-10.5**	**-10.8**	**-9.7**
4314 Electronics instrument tradespersons							
Certificate I & II	0	0	0	0	-	-	-
Cert. III & higher	170	230	250	280	18.1	19.3	15.5
Not known	(a)	0	(a)	(a)	44.2	73.2	0.0
Sub total	**170**	**230**	**250**	**290**	**18.2**	**19.7**	**15.3**
4315 Electronics and office equipment tradesperson							
Certificate I & II	0	30	60	40	-	-	-26.3
Cert. III & higher	860	670	500	340	-26.5	-23.9	-31.5
Not known	90	90	60	50	-20.6	-19.9	-22.0
Sub total	**950**	**790**	**620**	**430**	**-23.3**	**-19.7**	**-30.1**
4316 Communications tradespersons							
Certificate I & II	0	(a)	30	80	-	-	177.8
Cert. III & higher	60	110	160	190	44.7	62.6	14.6
Not known	40	50	50	50	4.8	16.2	-14.8
Sub total	**100**	**160**	**250**	**310**	**44.7**	**55.0**	**26.1**
Other 43 Electrical & electronics tradespersons not known at 4-digit level							
Certificate I & II	(a)	(a)	(a)	(a)	-24.6	-34.5	0.0
Cert. III & higher	790	1530	2040	2570	48.1	60.4	26.1
Not known	580	450	340	220	-27.4	-23.4	-34.9
Sub total	**1380**	**1980**	**2390**	**2800**	**26.6**	**31.4**	**17.4**
ALL ABOVE ELECTRICAL AND ELECTRONICS TRADESPERSONS							
Certificate I & II	(a)	40	90	130	140.4	214.5	40.4
Cert. III & higher	13990	14760	15320	16150	4.9	4.7	5.4
Not known	1460	1380	1190	890	-15.3	-9.6	-25.5
TOTAL	**15460**	**16180**	**16600**	**17160**	**3.6**	**3.6**	**3.4**
9918 Electrical and telecommunications trades assistants							
Certificate I & II	70	270	320	510	95.6	115.2	61.6
Cert. III & higher	0	(a)	(a)	20	-	-	142.9
Not known	(a)	20	30	(a)	-17.0	100.0	-85.7
Sub total	**80**	**290**	**350**	**530**	**91.9**	**116.0**	**51.4**

* Annual rates of growth are compound growth rates
(a) Represents figures between 1 and 9 inclusive
Source: NCVER unpublished apprentice and trainee data

5 Geographic region by State/Territory

This section focuses on trends in commencements from 1995 to 1998 by geographic region of the residential location of apprentices and trainees by State/Territory for electrical and electronics trades (excluding 9918 electrical and telecommunications trades assistants, table 8).

- Looking at Australia as a whole for electrical and electronics trades and comparing 1995 with 1998, the number of commencements rose for all major geographical regions except 'other metropolitan' where commencements fell from 430 in 1995 to 370 in 1998.

- Over the period 1995 to 1998, electrical and electronics trade commencements rose in every State and Territory except for Tasmania where they fell slightly, from 110 in 1995 to 100 in 1998. Western Australia experienced the highest annual growth rate over the period 1995 to 1998 of 19.7%, from 580 commencements in 1995 to 1,000 in 1998.

Table 8: Electrical & electronics trade* commencements by geographic region by State/Territory, 1995 to 1998

	Number				Annual growth rate**	Annual growth rate**	Growth rate
	1995	1996	1997	1998	1995 – 1998 (%)	1995 – 1997 (%)	1997 - 1998 (%)
New South Wales							
Capital city	1050	1060	1130	1120	2.2	3.7	-0.9
Other metro.	250	300	250	200	-7.8	0.8	-22.9
Rural	330	310	300	340	1.0	-5.1	14.3
Remote	10	(a)	(a)	(a)	-9.1	-35.5	80.0
Total[1]	**1910**	**1760**	**1740**	**1700**	**-3.8**	**-4.6**	**-2.1**
Victoria							
Capital city	750	590	690	810	2.5	-4.6	18.2
Other metro.	30	30	20	30	5.4	-14.9	61.9
Rural	220	190	230	240	3.9	2.1	7.6
Remote	(a)	(a)	(a)	(a)	26.0	73.2	-33.3
Total[1]	**1010**	**830**	**950**	**1110**	**3.1**	**-3.0**	**16.4**
Queensland							
Capital city	420	390	440	510	6.6	1.6	17.2
Other metro.	150	120	110	140	-2.0	-13.9	26.8
Rural	380	390	360	440	5.2	-1.9	20.8
Remote	110	110	120	90	-7.2	4.4	-26.7
Total[1]	**1070**	**1010**	**1040**	**1180**	**3.6**	**-1.3**	**14.1**
Western Australia							
Capital city	380	670	670	660	20.3	33.8	-2.7
Other metro.	0	0	0	0	-	-	-
Rural	110	160	200	180	16.8	33.6	-10.6
Remote	90	170	160	160	20.4	33.0	-1.2
Total[1]	**580**	**1010**	**1040**	**1000**	**19.7**	**33.7**	**-3.9**
South Australia							
Capital city	210	220	200	290	11.6	-1.0	41.6
Other metro.	0	0	0	0	-	-	-
Rural	80	80	70	90	3.5	-7.6	30.0
Remote	10	(a)	(a)	(a)	-11.2	-36.8	75.0
Total[1]	**300**	**300**	**280**	**380**	**8.6**	**-3.9**	**38.6**
Tasmania							
Capital city	50	50	50	40	-7.3	-6.7	-8.5
Other metro.	0	0	0	0	-	-	-
Rural	50	50	50	60	3.8	3.9	3.7
Remote	(a)	(a)	(a)	0	-100.0	0.0	-100.0
Total[1]	**110**	**100**	**100**	**100**	**-2.6**	**-1.9**	**-3.9**
Northern Territory							
Capital city	50	50	40	60	10.5	-7.9	59.0
Other metro.	0	0	0	0	-	-	-
Rural	(a)	10	(a)	10	10.1	-11.8	71.4
Remote	40	70	50	30	-8.7	13.4	-40.7
Total[1]	**100**	**120**	**100**	**110**	**3.0**	**1.0**	**7.0**
Australian Capital Territory							
Capital city	90	50	60	100	5.4	-18.4	75.9
Other metro.	(a)	0	(a)	(a)	0.0	0.0	0.0
Rural	0	(a)	(a)	(a)	-	-	100.0
Remote	0	0	0	0	-	-	-
Total[1]	**90**	**50**	**60**	**110**	**6.7**	**-15.9**	**71.4**
AUSTRALIA							
Capital city	3000	3070	3280	3600	6.2	4.5	9.7
Other metro.	430	440	390	370	-4.7	-5.1	-3.9
Rural	1180	1190	1220	1360	4.9	1.7	11.8
Remote	270	360	350	300	3.5	14.1	-14.9
TOTAL[1]	**5160**	**5170**	**5310**	**5690**	**3.3**	**1.5**	**7.1**

* Excluding 9918 electrical and telecommunications trades assistants

** Annual rates of growth are compound growth rates

[1]..Totals include other regions such as interstate and outside Australia and may include unknown information

(a) Represents figures between 1 and 9 inclusive

6 School attendance status

This section looks at commencements from 1996 to 1998 by school attendance status of apprentices and trainees (table 9).

- For all selected electrical and electronics trade occupations considered together (excluding electrical and telecommunications trades assistants), the number of apprentices and trainees who commenced their apprenticeship or traineeship while still attending school was less than 10 for each of the years 1996 and 1997 and only 30 in 1998. These comprised an insignificant proportion of all commencements.

- The only notable change in the number of apprentices and trainees commencing their apprenticeship or traineeship while still at school occurred for electricians, up from zero in 1996 to 20 in 1998.

- For the electrical and telecommunications trade assistants occupation, the number of apprentices and trainees who commenced their apprenticeship or traineeship while still attending school comprised an insignificant proportion for each year 1996 to 1998.

Table 9: Electrical and electronics trade commencements by school attendance status, 1996 to 1998

	Number		
	1996	1997	1998
3123 Electrical engineering associate professionals			
Still attending school	0	0	0
Finished school	(a)	30	20
Not known	0	(a)	(a)
Sub total	**(a)**	**30**	**30**
3124-13 Electronics engineering technician			
Still attending school	0	0	0
Finished school	(a)	0	0
Not known	0	0	0
Sub total	**(a)**	**0**	**0**
4311 Electricians			
Still attending school	0	(a)	20
Finished school	2,590	2,650	3,370
Not known	570	720	240
Sub total	**3,160**	**3,370**	**3,630**
4312 Refrigeration and airconditioning mechanics			
Still attending school	0	(a)	0
Finished school	350	420	550
Not known	100	140	50
Sub total	**450**	**560**	**610**
4313 Electrical distribution tradespersons			
Still attending school	0	0	0
Finished school	100	100	110
Not known	(a)	10	(a)
Sub total	**110**	**110**	**110**
4314 Electronics instrument tradespersons			
Still attending school	0	0	(a)
Finished school	50	50	100
Not known	10	(a)	20
Sub total	**60**	**60**	**120**
4315 Electronics and office equipment tradesperson			
Still attending school	(a)	0	(a)
Finished school	180	120	120
Not known	60	30	10
Sub total	**240**	**150**	**140**
4316 Communications tradespersons			
Still attending school	0	0	0
Finished school	90	120	150
Not known	(a)	10	(a)
Sub total	**90**	**130**	**160**
Other 43 Electrical & electronics tradespersons not known at 4-digit level			
Still attending school	(a)	(a)	(a)
Finished school	860	810	820
Not known	200	90	80
Sub total	**1,070**	**900**	**900**
ALL ABOVE ELECTRICAL AND ELECTRONICS TRADESPERSONS			
Still attending school	(a)	(a)	30
Finished school	4,220	4,290	5,240
Not known	950	1,010	420
TOTAL	**5,170**	**5,310**	**5,690**
9918 Electrical and telecommunications trades assistants			
Still attending school	0	(a)	(a)
Finished school	150	330	560
Not known	180	90	20
Sub total	**330**	**410**	**580**

(a) Represents figures between 1 and 9 inclusive

7 Other training

This section looks at the general vocational education and training (VET) student population in 1998 for electrical and electronics trade occupations but excluding those in streams in which apprentices and trainees would be expected to be most likely enrolled (that is, streams 3211, 3212 and 3221).

It should be noted that for the apprentice and trainee data presented elsewhere in this report, the ASCO code is based on apprentices' and trainees' declared vocation, that is, the actual job that they are employed in. The data presented in this section are based on occupation codes assigned to courses to indicate the most likely occupation relevant to each course. However, students undertaking a VET course may not be employed in the occupation assigned to the course, or even employed.

The data in this section therefore provide a rough estimate of the amount of non-apprentice and non-trainee VET activity relevant to the electrical and electronics trade occupations – regardless of whether or not this training is actually utilised in these occupations.

Indications are that around 20,640 students (excluding electrical and telecommunications trades assistants) were enrolled in a non-apprentice or non-trainee VET course in 1998 relating to the electrical and electronics trade occupations. Over half of these (56.6%) were at AQF level III or equivalent or higher levels (table 10).

A further 3,400 students were enrolled in a non-apprentice or non-trainee VET course in 1998 relating to electrical and telecommunications trades assistants occupations.

In relation to non-apprentice and non-trainee VET enrolments relevant to electrical and electronics trade occupations (excluding electrical and telecommunications trades assistants), despite a rise in enrolments generally from 1997 to 1998, the number of enrolments from those still attending school fell from 990 in 1997 to 420 in 1998. The largest falls occurred for the electronics engineering technician and electronics and office equipment tradesperson occupations while reasonable gains occurred for the electrician, electrical distribution tradesperson, and electronics instrument tradesperson occupations.

For the electrical and telecommunications trades assistants occupation, the number of non-apprentice and non-trainee VET enrolments from those still attending school grew appreciably, from 30 in 1997 to 230 in 1998 (table 11).

Table 10: Electrical and electronics trades: Non-apprentice and non-trainee VET students, 1998

	Diplomas	AQF Certificate IV and equivalent	AQF Certificate III and equivalent	AQF Certificates I and II	Other certificates, endorsements and other	Statements of Attainment	Non award courses	Total Students
3123 Electrical Engineering Associate Professionals	3,190	2,190	330	20	0	70	10	5,660
3124-13 Electronics Engineering Technician	210	800	0	280	0	30	0	1,320
43 Electrical & Electronics Tradespersons	130	2,400	2,460	1,550	1,340	3,740	2,860	14,000
NET SUB TOTAL	**3,520**	**5,370**	**2,790**	**1,850**	**1,340**	**3,840**	**2,870**	**20,640**
9918 Electrical & Telecommunications Trades Assistants	0	0	(a)	1,740	420	40	1,210	3,400

(a) Represents figures between 1 and 9 inclusive

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Table 11: Electrical and electronics trades: Non-apprentice and non-trainee VET enrolments by school attendance status, 1997 to 1998 (Number)

	1997	1998
3123 Electrical engineering associate professionals		
Still attending school	80	70
Finished school	5380	4770
Not known	1530	1350
Sub total	**6990**	**6200**
3124-13 Electronics engineering technician		
Still attending school	570	30
Finished school	2520	960
Not known	550	410
Sub total	**3650**	**1400**
4311 Electricians		
Still attending school	30	100
Finished school	3460	5300
Not known	1150	1710
Sub total	**4640**	**7110**
4312 Refrigeration and airconditioning mechanics		
Still attending school	(a)	(a)
Finished school	250	280
Not known	180	270
Sub total	**440**	**550**
4313 Electrical distribution tradespersons		
Still attending school	(a)	50
Finished school	500	730
Not known	210	550
Sub total	**720**	**1330**
4314 Electronics instrument tradespersons		
Still attending school	(a)	50
Finished school	290	1010
Not known	70	160
Sub total	**360**	**1210**
4315 Electronics and office equipment tradesperson		
Still attending school	290	110
Finished school	2530	1570
Not known	520	450
Sub total	**3340**	**2130**
4316 Communications tradespersons		
Still attending school	10	10
Finished school	1460	2470
Not known	210	610
Sub total	**1680**	**3090**
ALL ABOVE ELECTRICAL AND ELECTRONICS TRADESPERSONS		
Still attending school	990	420
Finished school	16400	17090
Not known	4420	5510
TOTAL	**21800**	**23010**
9918 Electrical and telecommunications trades assistants		
Still attending school	30	230
Finished school	1480	2550
Not known	990	980
Sub total	**2500**	**3760**

(a) Represents figures between 1 and 9 inclusive

8 Comparison with projected employment trends

For the selected electrical and electronics trade occupation categories in the table below (but excluding ASCO code 9918), the total number in employment is forecast[2] to grow from 186,600 in 1997/98 to 200,600 in 2000/01 representing an average annual growth rate of about 2.5% (table 12). Given the annual growth rate for the number of apprentices and trainees in training in these occupation categories of 3.6% over the period 1995 to 1998, indications are that the number of apprentices and trainees in training as a proportion of the number employed in these occupation categories will increase from its current level of around 9%.

The communications tradespersons occupation category has the highest forecast average annual growth rate of 5.4%, this occupation also having experienced one of the greatest growth rates (44.7%) for apprentices and trainees from 1995 to 1998.

In relation to the electricians occupation category specifically, the total number in employment is forecast to grow at an average annual growth rate of 2.4%. Given the annual growth rate for the number of apprentices and trainees in training in this occupation category of less than 1% over the period 1995 to 1998, indications are that the number of apprentices and trainees in training as a proportion of the number employed in this occupation category will decrease from its current level of around 11%.

Only one category, electrical distribution tradespersons, had a forecast decline, from 7,400 in 1997/98 to 7,200 in 2000/01, this occupation being one of only two electrical and electronics trade occupations that experienced a decline in apprentices and trainees from 1995 to 1998.

In relation to the electrical and telecommunications trades assistants occupation category specifically, the total number in employment is forecast to grow at an average annual growth rate of 2.0%. Given the annual growth rate for the number of apprentices and trainees in training in this occupation category of more than 90% over the period 1995 to 1998, indications are that the number of apprentices and trainees in training as a proportion of the number employed in this occupation category will increase from its current level of around 15%.

Table 12: Electrical and electronics trade occupations employment forecasts

	Average annual growth 97/98 - 00/01 (% pa)	Total employment 1997/98 ('000)	Total employment 2000/01 ('000)	Share of total employment 1997/98 (%)	Share of total employment 2000/01 (%)
3123 Electrical engineering associate professionals	0.9	8.2	8.4	0.1	0.1
4311 Electricians	2.4	99.2	106.3	1.2	1.2
4312 Refrigeration & airconditioning mechanics	2.2	13.0	13.9	0.2	0.2
4313 Electrical distribution tradespersons	-0.6	7.4	7.2	0.1	0.1
4314 Electronics instrument tradespersons	0.8	0.6	0.6	0.0	0.0
4315 Electronics & office equipment tradesperson	0.9	27.0	27.7	0.3	0.3
4316 Communications tradespersons	5.4	31.2	36.5	0.4	0.4
Sub total	2.5	186.6	200.6	2.3	2.3
9918 Electrical & telecommunications trades assist.	2.0	3.5	3.7	0.0	0.0

Source: Unpublished forecasts provided to NCVER by ECONTECH. The ECONTECH modelling methodology is described in Murphy, C. "Where the jobs are: the outlook for jobs" in P. Curtin ed *Future training issues in Australia's industries*, NCVER, Adelaide, 1999.

[2] Unpublished forecasts provided to NCVER by ECONTECH, Kingston, ACT.

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